



Heat Stress Program

A-4J-0020

ASO-7

September 1, 2016



EOs



- **EO #07-1 IDENTIFY** the various elements of the Heat Stress Program
- **EO #07-2 DEFINE** the duties and responsibilities of the Safety Officer within the Heat Stress Program



Reference



- **OPNAVINST 5100.19E; CH B2**



History



- **1872 - Monitor class armored vessels**
- **1918 - USS KENTUCKY**
- **1951 - USS DES MOINES**
- **1960 - Present**



Program Elements



- **Monitoring and surveying**
- **Establishing safe work schedules**
- **Investigating and reporting personnel heat injuries**
- **Training**
- **Recordkeeping**



Heat Acclimatization



- **For most individuals, repeated exposure causes physiologic adaptations**
 - **Body becomes more efficient at coping with heat stress**
 - ▢ **Usually requires 3 weeks or more to fully acclimatize**
 - ▢ **Dehydration, lack of sleep, illness, alcohol increase heat stress susceptibility**



High Heat Areas



- Machinery spaces and catapult rooms
- Laundries
- Galleys and mess halls
- Flight deck



Heat Rash



- **Painful rash caused by clogged sweat pores**
 - **Typically caused by working in hot spaces or sleeping in hot berthing compartments**



Heat Exhaustion



- **Symptoms include:**
 - **Clammy moist skin**
 - ▢ **Weakness and fatigue**
 - ▢ **Nausea**
 - ▢ **Headache**
 - ▢ **Low blood pressure**
 - ▢ **Fainting**
- **Treatment:**
 - ▢ **Remove victim from the heat and administer fluids**



Heat Stroke



- **Caused by thermoregulatory failure**
- **Symptoms include:**
 - ➡ **Hot dry skin**
 - ▢ **Hyperthermia**
 - ▢ **Brain disorders (delirium, unconsciousness)**
- **Treatment:**
 - ▢ **Move to cool area, cool body rapidly, treat for shock, and call medical**



PHEL Curves



- **Physiological Heat Exposure Limits (PHEL)**
- **Six PHEL Curves**
 - I (light work) to VI (heavy work)
- **Two charts**
 - ▢ With and without combustion gases / fuel vapors



Dry-Bulb Thermometers



- **Alcohol in a glass (NSN 6685-00-243-9964)**
 - ▢ **Do NOT require calibration or NCR stickers**
- **Hung in area that best represents temps for workers in space**
 - ▢ **Hung by non-heat conducting material**
 - ▢ **In or out of ventilation air stream, at least 2 feet from vent opening**



Wet-Bulb-Globe Temperature (WBGT)



- **WBGT = 0.7WB + 0.2GT +**
- **Determined with**
 - **WBGT meter**
 - ▢ **Heat stress monitor**
 - ▢ **Automated Heat Stress System (AHSS) - If used, ensure that airflow to sensor doesn't exceed 600 fpm**
- **OPNAVINST 5100.19E provides detailed instructions for WBGT measurement devices**



Dry-Bulb Temperature Recording



- **Ships shall record dry bulb readings when U/W or when heat stress conditions exist inport. Designated spaces will be monitored when manned. Frequency of readings:**
- **Every four hours if temp < 85F**
- **Every hour if temp > 85F**
- **Every hour at temporary installations where the temp exceeds 85F during repair or maintenance**



Heat Stress Survey Requirements



- **Ships shall conduct heat stress surveys whenever the temperature from a permanently mounted hanging DB thermometer reaches or exceeds:**
- **PHEL I through III**
 - ⇒ Watch/Work length 4 hours or less DB => 100°F
 - ⇒ Watch/Work length greater than 4 hours DB => 90°F
- **PHEL IV through VI**
 - ⇒ DB = 85°F



Heat Stress Survey Requirements



- In any space where a heat injury occurs
- Prior to conducting engineering casualty control (ECC) drills
- In any space when CO determines that heat stress may exist
- As required for follow-on surveys



Training Requirements



- **All hands shall receive heat stress training upon reporting aboard - topics must include:**
 - **Heat stress health hazards**
 - ▢ **Symptoms of excessive heat stress exposure**
 - ▢ **Heat stress first aid procedures**
 - ▢ **Heat stress monitoring**
 - ▢ **Causes of heat stress conditions**



Training Requirements



- **Viewing videotape "Play it Cool: Heat Stress Prevention Afloat" (8055801-DN) satisfies requirement**
- **Surveyors shall complete Heat Stress Surveyor PQS within 12 weeks of assignment**



Common Discrepancies



- **Poorly trained surveyors**
- **Surveys not taken when required**
- **Inadequate survey review - errors not caught by supervisors**
- **Missing or poorly positioned thermometers**
- **Broken equipment and material deficiencies not addressed**



Ice Vests



Summary



- **Safety Officers must take an active role in the Heat Stress Program**
- **ID of heat stress hazards must be part of workplace inspection**
- **Watch the paperwork!**





Any Questions?

